

A Systematic Review of Quasi-Experimental Methodologies for Cost-Effectiveness Analysis in Rwandan District Health Systems

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Received: 21 September 2026 | Accepted: 03 November 2026 | Published: 23 December 2026 | DOI:

[10.5281/zenodo.18948633](https://doi.org/10.5281/zenodo.18948633)

ABSTRACT

Background: Cost-effectiveness analysis (CEA) is crucial for evidence-based resource allocation in district health systems. In Rwanda, where health system strengthening is a priority, rigorous yet pragmatic evaluation methodologies are required. Quasi-experimental designs (QEDs) offer a viable alternative to randomised controlled trials in real-world settings, but their methodological application and robustness in this context require systematic assessment.

Purpose and objectives: This systematic review aims to critically evaluate the application, rigour, and reporting of quasi-experimental methodologies used for CEA in Rwandan district hospital systems, identifying methodological strengths, limitations, and best practices.

Keywords: *Cost-effectiveness analysis, quasi-experimental design, district health systems, Rwanda, Sub-Saharan Africa, health economics, health systems strengthening*

Article Highlights

- Difference-in-differences dominates evaluations of health financing interventions in Rwanda.
- Methodological rigour is often insufficient, potentially biasing cost-effectiveness estimates.
- A limited but informative corpus of studies was identified through systematic review.
- Addressing time-varying confounding and spatial dependencies remains a key challenge.

Primary Analytical Model

The review focused on the difference-in-differences specification: $Y_{it} = \alpha + \beta(\text{Treat}_i \times \text{Post}_t) + \gamma_t + \delta_i + \varepsilon_{it}$, with standard errors clustered at the facility level.

This review assesses methodological application, not intervention outcomes.

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